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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,267	05/10/2001	Keisuke Ban	0038-0358P	5452
2292	7590	07/10/2003		
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER	
			LIN, KUANG Y	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 07/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/852,267	BAN ET AL.	
	Examiner	Art Unit	
	Kuang Y. Lin	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 June 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) Interview Summary (PTO-413) Paper No(s) _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

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1. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what scope is claimed. It appears to be that the claim shall depend from claim 8 to render the meaning definite.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidinger and further in view of Jeanneret, Prieto and Webbere.

Seidinger shows to provide a casting mold with a metal inlet system and a feeder to facilitate dispensing of molten metal during pouring and filling of

the portion that is just solidifying during solidification of molten metal.

Jeanneret discloses that it is desirable to solidify molten metal directionally such that feeding metal is always available for that portion of the casting that is just solidifying. Prieto shows (see, particularly, col. 15, line 46 through col. 6, line 16) to provide mold material of different thermal conductivity for different sections of the casting mold such that to promote the directional solidification process. It would have been obvious to make the terminal mold part of Seidinger with a molding material which has a higher thermal conductivity than that of a molding material for making the feeder such that to promote a directional solidification process as taught by Prieto and thereby to ensure a proper filling of molten metal in the portion of the casting that is just solidifying as taught by Jeanneret.

Further, Webbere shows to provide a deoxidizing compound in a mold cavity to deoxidize the oxide film during a casting process and thereby reduce the cast defect. It would have been obvious to provide the deoxidizing compound of Webbere in the process of Seidinger to reduce the oxide film and thereby to obtain a casting of better quality. With respect to claims 2, 3, 6 and 7, the specific process parameters depending on the alloy system to be cast and the specific mold material used and it would have been obvious to obtain the optimal process parameter through routine experimentation. With respect to claim 4, it is conventional to coat die cavity with lubricant so as to improve the fluidity and the running property of the molten metal as acknowledged by applicants.

5. Claim 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidinger and further in view of Jeanneret, Prieto and Webbere as applied to claim 1 above, and further in view of Buchborn.

It would have been obvious to make the feeder head of Seidinger detachable in view of Buchborn to expedite the cast article removal process.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seidinger and further in view of Jeanneret, Prieto and Webbere as applied to claim 1 above, and further in view of Shekhter et al and Darken et al.

Shekhter et al show that alkaline earth metal, such as magnesium gas, is a very strong reduction agent for reducing metal oxide. It would have been obvious to use the magnesium gas in the process of Webbere if a strong reduction agent is needed. Darken et al further show that the free energy of formation for MgO has greater negative value than that for Al₂O₃. It would have been obvious to use Mg or Mg compound as a reducing agent when casting Al or Al alloy in view of Darken et al.

7. Applicant's arguments filed June 18, 2003 have been fully considered but they are not persuasive.

a. In page 2 of the remarks applicants stated that based on the disclosure of JP 3-51,611 the dichlorodifluoromethane undergo a thermal decomposition during casting process of Webbere. However, it is noted that JP '611 also discloses the deoxidization process of dichlorodifluoromethane with $\Delta H = - 77$ Kcal/mol. Since molten metal

always contain certain amount of hydrogen, it is possible that dichlorodifluoromethane in the process of Webbere is under deoxidization process. Further, in col. 1, line 27+ of patent 5,314,525 to Eckert et al, it also discloses that dichlorodifluoromethane is an active gas to reduce the amount of gas impurity and oxides, along with impurity such as sodium and calcium, from molten aluminum. Thus, it is a further evidence that dichlorodifluoromethane is a deoxidization agent in the process of Webbere. **Without any experimental evidence, applicants' allegation that dichlorodifluoromethane is not a deoxidization agent is moot.**

b. During the deoxidization process the fluorine and chlorine as well as hydrocarbon react with the metallic and non-metallic elements in the molten metal to form flux which floats on the surface of the molten metal. The flux prevents molten metal from oxidizing by the oxygen from atmosphere. Thus, the disclosure of Webbere and Eckert et al is consistent with the disclosure of "Nikkin Flux".

c. With respect to claim 10, although Schekhter et al do not show the use of magnesium nitride compound as a deoxidization agent, it would have been obvious that any magnesium compound, which oxide has greater negative value of free energy of formation than that of alumina, can be used as deoxidization agent in view of Darken et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is

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703-308-2322. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas X Dunn can be reached on 703-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7719 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

July 8, 2003



KUANG Y. LIN
EXAMINER
GROUP 320

